

CLAIMS

1. A communication apparatus that is used by being connected to a printing apparatus and a consumable's order receiving apparatus for receiving an order for a consumable used by the printing apparatus, the communication apparatus comprising:

a content obtaining unit operable to obtain a print content with which a point value is associated;

a print control unit operable to i) output print data of the obtained print content so as to cause the printing apparatus to print said print data, and ii) accumulate the point value associated with the print content; and

an ordering unit operable to transmit, to the consumable's order receiving apparatus, a notification for ordering a consumable, together with the accumulated point value,

wherein the consumable's order receiving apparatus receives the order for the consumable from the communication apparatus, and performs charging processing of reducing a price of the consumable by an amount equivalent to the point value transmitted together with the order.

2. The communication apparatus according to Claim 1, wherein the print control unit accumulates the point value after confirming that the printing performed by the printing apparatus is completed.

3. The communication apparatus according to Claim 2, wherein the print control unit confirms that the printing performed by the printing apparatus is completed, by repeatedly performing, on the printing apparatus, polling of whether or not the printing is completed.

4. The communication apparatus according to Claim 2,

wherein the print control unit confirms that the printing performed by the printing apparatus is completed, by obtaining a voluntary notification from the printing apparatus indicating that the printing is completed.

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5. The communication apparatus according to Claim 1,
wherein the ordering unit performs the transmission after detecting an occurrence of a state in which a consumable runs out, the state indicating that a remaining amount of the consumable goes below a predetermined amount.

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6. The communication apparatus according to Claim 5,
wherein the ordering unit detects the occurrence of the state in which a consumable runs out, by receiving a notification from the printing apparatus indicating said occurrence.

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7. The communication apparatus according to Claim 5,
wherein the ordering unit receives a notification from the printing apparatus indicating the remaining amount of the consumable, compares the remaining amount with the predetermined threshold, and detects the occurrence of the state in which a consumable runs out, in the case where the remaining amount goes below the threshold.

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8. The communication apparatus according to Claim 5,
wherein the ordering unit includes
a display unit for displaying on a screen the occurrence of the state in which a consumable runs out, after detecting said occurrence.

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9. The communication apparatus according to Claim 5,
wherein the ordering unit performs the transmission without

obtaining an ordering instruction from an operator, after detecting the occurrence of the state in which a consumable runs out.

10. The communication apparatus according to Claim 1,
5 wherein the ordering unit performs the transmission after obtaining an ordering instruction from an operator.

11. The communication apparatus according to Claim 1,
wherein the ordering unit displays on a screen the point value
10 accumulated by the print control unit, and performs the transmission after obtaining an operator's instruction indicating a use of the point value.

12. The communication apparatus according to Claim 1,
15 wherein the print control unit displays on a screen the point value associated with the print content obtained by the content obtaining unit, outputs the print data of the print content so as to cause the printing apparatus to print said print data, in the case of obtaining an operator's print instruction in response to the display.

20 13. The communication apparatus according to Claim 11,
wherein the content obtaining unit obtains the print content from a plurality of providers,
the print control unit accumulates the point value for each of
25 the providers, and
the ordering unit displays on a screen the point value accumulated for each of the providers.

14. The communication apparatus according to Claim 11, further
30 comprising
a consumable information obtaining unit operable to obtain, from the printing apparatus, consumable information for identifying

a used amount of the consumable,
wherein the ordering unit displays the obtained consumable
information together with the point value.

5 15. The communication apparatus according to Claim 14,
wherein the consumable information obtaining unit further
obtains device specific information held by the printing apparatus
for identifying the consumable, in addition to the consumable
information, and
10 the ordering unit further displays on the screen the obtained
device specific information together with the point value.

16. The communication apparatus according to Claim 15,
wherein the device specific information includes at least one
15 of a maker's name, a model number and a serial number of the
printing apparatus, and a corresponding model number of a
consumable.

17. The communication apparatus according to Claim 1,
20 wherein the print control unit adjusts the point value to be
accumulated based on conditions for the printing performed by the
printing apparatus.

18. The communication apparatus according to Claim 1,
25 wherein the print control unit adjusts the point value to be
accumulated based on at least one of the following conditions for the
printing performed by the printing apparatus: a number of sheets to
be printed; a sheet size; either one-side or two-side printing; a page
number to be printed on a single sheet; a quality of printing; and
30 either color or monochrome printing.

19. The communication apparatus according to Claim 1,

wherein the print control unit accumulates the point value after adjusting the point value based on a number of pages that are printed until the printing performed by the printing apparatus is completed, in the case where the printing is not completed without errors.

20. The communication apparatus according to Claim 1, further comprising

a broadcast receiving unit operable to receive digital broadcast,

wherein the content obtaining unit obtains, via a transmission line, the print content from a content providing apparatus holding a print content, based on link information included in the digital broadcast received by the broadcast receiving unit.

21. The communication apparatus according to Claim 1, further comprising

a broadcast receiving unit operable to receive digital broadcast,

wherein the content obtaining unit obtains the print content directly from the digital broadcast received by the broadcast receiving unit.

22. A communication apparatus that is used by being connected to a content providing apparatus and a printing apparatus, the communication apparatus comprising:

a receiving unit operable to receive, from the content providing apparatus, a print content with which a point value is associated, the point value being used for reducing a purchase price of a consumable used for a printing performed by the printing apparatus;

a print control unit operable to i) output print data of the

received print content so as to cause the printing apparatus to print said print data, and ii) accumulate the point value associated with the print content; and

an ordering unit operable to transmit, to the content providing apparatus, a notification for purchasing a consumable, together with the accumulated point value.

23. A program for a communication apparatus that is used by being connected to a printing apparatus and a consumable's order receiving apparatus for receiving an order for a consumable used by the printing apparatus, the program causing a computer to function as a unit comprised in the communication apparatus according to one of Claim 1 and Claim 22.

24. A communication apparatus that is used by being connected to a printing apparatus and a service processing apparatus for receiving a service to be provided for the printing apparatus, the communication apparatus comprising:

a user information obtaining unit operable to obtain information for identifying a user; and

a service transmitting unit operable to transmit, to the service processing apparatus, a notification for receiving a service, together with the information for identifying a user.

25. The communication apparatus according to Claim 24, wherein the service to be provided for the printing apparatus is to place an on-line order for a consumable after receiving warning information warning of a remaining amount of a consumable used by the printing apparatus and device specific information held by the printing apparatus.

26. The communication apparatus according to Claim 24,

wherein the service to be provided for the printing apparatus is a grasp of a state of the printing apparatus and a maintenance on the printing apparatus after receiving usage status information of the printing apparatus and device specific information held by the
5 printing apparatus.

27. The communication apparatus according to one of Claim 25 and Claim 26,

wherein the device specific information held by the printing
10 apparatus includes one of a maker's name, a model number and a serial number of the printing apparatus, and a corresponding model number of a consumable.

28. The communication apparatus according to one of Claim 25
15 and Claim 26,

wherein the service transmitting unit transmits, to the service processing apparatus, a notification for receiving a next service, in the case where a notification for receiving a service is once transmitted to the service processing apparatus and only when the
20 remaining amount of the consumable increases to surpass a warning level and again goes below the warning level.

29. The communication apparatus according to one of Claim 25 and Claim 26,

25 wherein in the case of sending a notification for receiving a service to the service processing unit, the service transmitting unit
i) stores information on the remaining amount of the consumable into a non-volatile memory, when the communication apparatus is turned off, the information being received from the printing
30 apparatus, and ii) judges whether or not to transmit said notification to the service processing apparatus using said information stored in the non-volatile memory and information on the remaining amount

of the consumable newly received from the printing apparatus, when the communication apparatus is again turned on.

30. The communication apparatus according to Claim 24,
5 wherein the information for identifying a user is stored in an IC card, and is identification information specific to the IC card that is inserted in the communication apparatus.

31. A communication apparatus that is connected to a printing
10 apparatus, comprising:

a receiving unit operable to receive response information transmitted from the printing apparatus; and

a display unit operable to display information relating to the printing apparatus based on the received response information.

15 32. The communication apparatus according to Claim 31, wherein the response information has: a field indicating a type of events, a field indicating a type of character codes for a message relating to an event detected by the detecting unit, a field
20 indicating a length of the message, and a variable-length field for storing the message.

33. The communication apparatus according to Claim 31,
25 wherein the display unit displays the message based on the field indicating the type of events and the field indicating the type of character codes which are included in the response information.

34. A program for a communication apparatus that is used by being connected to a printing apparatus and a service processing
30 apparatus which receives a service to be provided for the printing apparatus, the program causing a computer to function as a unit comprised in the communication apparatus according to Claim 24.

35. A printing apparatus comprising:

a printing unit operable to receive and print print data of a print content, transmitted from a content outputting apparatus;

a consumable information generating unit operable to
5 generate consumable information for identifying a used amount of a consumable used for the printing performed by the printing unit; and

a transmitting unit operable to transmit the generated consumable information to the content outputting apparatus,

10 wherein the content outputting apparatus performs ordering processing for the consumable based on the consumable information transmitted from the transmitting unit.

36. The printing apparatus according to Claim 35,

15 wherein the consumable information generating unit further obtains device specific information held by the printing apparatus for identifying the consumable,

the transmitting unit transmits the device specific information together with the consumable information, and

20 the content outputting apparatus performs the ordering processing based on the consumable information and the device specific information.

37. The printing apparatus according to Claim 36,

25 wherein the device specific information includes one of a maker's name, a model number and a serial number of the printing apparatus, and a corresponding model number of a consumable.

38. The printing apparatus according to Claim 36,

30 wherein the consumable information includes information indicating a remaining amount of the consumable.

39. The printing apparatus according to Claim 36,
wherein the consumable information includes information
indicating whether or not a state in which a consumable runs out has
occurred, the state indicating that a remaining amount of a
5 consumable goes below a predetermined amount.

40. The printing apparatus according to Claim 36, further
comprising

10 a print completion detecting unit operable to detect a
completion of the printing performed by the printing unit,

wherein, in the case where the print completion detecting unit
detects a completion of the printing, the transmitting unit further
transmits a notification indicating said completion to the content
outputting apparatus, and

15 the content outputting apparatus accumulates a point value
to be used for reducing a purchase price of the consumable, based
on the notification of the print completion transmitted from the
transmitting unit.

20 41. The printing apparatus according to Claim 36,
wherein the printing unit receives a point value to be used for
reducing a purchase price of the consumable, together with the print
data of the print content, and

the printing apparatus further comprises:

25 a point accumulating unit operable to accumulate and hold a
point value associated with the print content, in the case where the
print data is printed by the printing unit; and

a point outputting unit operable to transmit, to the content
outputting apparatus, the point value held by the point
30 accumulating unit.

42. The printing apparatus according to Claim 36, further

comprising

a storing unit operable to store the device specific information for identifying the printing apparatus,

5 wherein the transmitting unit transmits, to the content outputting apparatus, the device specific information stored in the storing unit, together with the consumable information,

the consumable information and the device specific information are described in a markup language for data broadcasting, and

10 the content outputting apparatus that is a digital broadcast receiver analyzes and displays on a screen the consumable information and the device specific information which are transmitted from the transmitting unit.

15 43. The printing apparatus according to Claim 36, further comprising

a maintenance information generating unit operable to generate maintenance information useful for protecting the printing apparatus,

20 wherein the transmitting unit further transmits, to the content outputting apparatus, the maintenance information generated by the maintenance information generating unit, and

the content outputting apparatus sends, to a person who performs maintenance on the printing apparatus, the maintenance
25 information transmitted from the transmitting unit.

44. The printing apparatus according to Claim 43,

wherein the maintenance information includes movable history information indicating at least one of a total amount of time
30 for power distribution since the printing apparatus is used, a moving distance of a print head, and a number of sheets used for printing.

45. The printing apparatus according to Claim 43,
the maintenance information includes error information
indicating at least one of date and time of errors occurred in the
printing apparatus in a past, a type of errors, and a number of errors
5 depending on the type of errors.

46. The printing apparatus according to Claim 43, further
comprising

10 a storing unit operable to store the device specific information
for identifying the printing apparatus,

wherein the transmitting unit transmits, to the content
outputting apparatus, the device specific information stored in the
storing unit, together with the maintenance information.

15 47. The printing apparatus according to Claim 46,
wherein the consumable information, the maintenance
information and the device specific information are described in a
markup language for data broadcasting, and

20 the content outputting apparatus that is a digital broadcast
receiver analyzes and displays on a screen the consumable
information, the maintenance information and the device specific
information which are transmitted from the transmitting unit.

25 48. The printing apparatus according to Claim 35, further
comprising

a storing unit operable to store device specific information for
identifying the printing apparatus,

30 wherein the transmitting unit transmits, to the content
outputting apparatus, the device specific information stored in the
storing unit, together with the consumable information.

49. A printing apparatus comprising:

a printing unit operable to receive and print print data of a print content, transmitted from a content outputting apparatus;

a maintenance information generating unit operable to generate maintenance information useful for protecting each part
5 used for the printing performed by the printing unit; and

a transmitting unit operable to transmit the generated maintenance information to the content outputting apparatus,

wherein the content outputting apparatus sends, to a person who performs maintenance on the printing apparatus, the
10 maintenance information transmitted from the transmitting unit.

50. The printing apparatus according to Claim 49,

wherein the maintenance information includes movable history information indicating at least one of a total amount of time
15 for power distribution since the printing apparatus is used, a moving distance of a print head, and a number of sheets used for printing.

51. The printing apparatus according to Claim 49,

wherein the maintenance information includes error
20 information indicating at least one of date and time of errors occurred in the printing apparatus in a past, a type of errors and a number of errors depending on the type of errors.

52. The printing apparatus according to Claim 49,

25 wherein the maintenance information includes information indicating at least one of version information of a firmware that is being used by the printing apparatus.

53. The printing apparatus according to Claim 49, further
30 comprising

a storing unit operable to store device specific information for identifying the printing apparatus,

wherein the transmitting unit transmits, to the content outputting apparatus, the device specific information stored in the storing unit, together with the maintenance information.

5 54. The printing apparatus according to Claim 53,
wherein the device specific information includes at least one of a maker's name, a model number and a serial number of the printing apparatus, and a corresponding model number of a consumable.

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55. The printing apparatus according to Claim 53,
wherein the maintenance information and the device specific information are described in a markup language for data broadcasting, and

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the content outputting apparatus that is a digital broadcast receiver analyzes and displays on a screen the maintenance information and the device specific information which are transmitted from the transmitting unit.

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56. A printing apparatus comprising:
a printing unit operable to receive and print print data of a print content, transmitted from a content outputting apparatus;
a service information generating unit operable to generate service information useful for identifying a state of each part used
25 for the printing performed by the printing unit;

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a device specific information keeping unit operable to keep device specific information held by the printing unit; and

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a transmitting unit operable to transmit, to the content outputting apparatus, the generated service information and the device specific information taken out from the device specific information keeping unit,

wherein the content outputting apparatus is a digital

broadcast receiver, and asks for the service based on the service information and the device specific information which are transmitted from the transmitting unit.

5 57. The printing apparatus according to Claim 56,
wherein the service information is warning information
warning of a remaining amount of a consumable that is being used
by the printing apparatus.

10 58. The printing apparatus according to Claim 56,
wherein the service information is information indicating a
usage status of the printing apparatus.

15 59. The printing apparatus according to Claim 56,
wherein the device specific information includes at least one
of a maker's name, a model number and a serial number of the
printing apparatus, and a corresponding model number of a
consumable.

20 60. The printing apparatus according to Claim 56,
wherein the service information is version information of a
firmware that is being used by the printing apparatus.

25 61. The printing apparatus according to Claim 60,
wherein the version information of the firmware indicates
version information of each execution file composing the firmware
that is being used by the printing apparatus.

30 62. The printing apparatus according to Claim 60,
wherein the version information of the firmware indicates
version information of each of a plurality of micro-computers for
realizing the firmware that is being used by the printing apparatus.

63. A printing apparatus comprising:

a printing unit operable to receive and print print data of a print content, transmitted from a content outputting apparatus;

5 a detecting unit operable to detect a state of each part involved in the printing performed by the printing unit;

a service information generating unit operable to generate service information useful for handling the each part detected by the detecting unit;

10 a response information generating unit operable to generate response information for responding to the content outputting apparatus, based on the information generated by the service information generating unit; and

a transmitting unit operable to transmit the response information to the content outputting apparatus,

15 wherein the content outputting apparatus that is a digital broadcast receiver displays, on a screen, device information according to the printing unit, based on the response information transmitted from the transmitting unit.

20 64. The printing apparatus according to Claim 63,

wherein the response information has at least: a field indicating a type of events detected by the detecting unit; a field indicating a type of character codes for a message relating to the event detected by the detecting unit; a field indicating a length of
25 the message; and a variable-length field for storing the message.

65. A program for a printing apparatus which prints print data of a print content, transmitted from a content outputting apparatus, the program causing a computer to function as a unit comprised in
30 the printing apparatus according to one of Claim 35, Claim 49, Claim 56 and Claim 63.

66. A consumable's order receiving apparatus that is connected, via a transmission line, to a communication apparatus which outputs print data of a print content to a printing apparatus, and receives, from the communication apparatus, an order for a consumable used
5 by the printing apparatus,

wherein the communication apparatus comprises:

a content obtaining unit operable to obtain the print content with which a point value is associated;

a print control unit operable to i) output print data of the
10 obtained print content so as to cause the printing apparatus to print said print data, and ii) accumulate the point value associated with the print content; and

an ordering unit operable to transmit, to the consumable's order receiving apparatus, a notification for ordering a consumable,
15 together with the accumulated point value, and

the consumable's order receiving apparatus comprises:

an order-receiving unit operable to receive, from the communication apparatus, the order for the consumable together with the point value; and

20 a charging processing unit operable to perform charging processing of reducing a purchase price of the consumable by an amount equivalent to the received point value.

67. The consumable's order receiving apparatus, according to
25 Claim 66,

wherein the content obtaining unit obtains, via a transmission line, the print content from a content providing apparatus having a print content, and

the charging processing unit sends, to the content providing
30 apparatus, a notification charging for a cost equivalent to the point value.

68. The consumable's order receiving apparatus, according to Claim 67,

wherein the charging processing unit orders the consumable to a person who provides the consumable, and sends the notification charging for the cost to the content providing apparatus.

69. A program for a consumable's order receiving apparatus that is connected to a communication apparatus which i) outputs, to a printing apparatus, print data of a print content, and ii) receives, from the communication apparatus, an order for a consumable used by the printing apparatus, the program causing a computer to function as a unit comprised in the consumable's order receiving apparatus according to one of Claim 66 through Claim 68.

70. A communication system comprising a printing apparatus, a communication apparatus for outputting, to the printing apparatus, print data of a print content, and a consumable's order receiving apparatus for receiving an order for a consumable used by the printing apparatus,

wherein the communication apparatus includes:

a content obtaining unit operable to obtain a print content with which a point value is associated;

a print control unit operable to i) output the print data of the obtained print content so as to cause the printing apparatus to print said print data, and ii) accumulate the point value associated with the print content; and

an ordering unit operable to transmit, to the consumable's order receiving apparatus, a notification for ordering a consumable, together with the accumulated point value, and

the consumable's order receiving apparatus includes:

an order-receiving unit operable to receive, from the communication apparatus, the order for the consumable together

with the point value; and

a charging unit operable to perform charging processing of reducing a purchase price of the consumable by an amount equivalent to the received point value.